There are so many printers on the market today that it would be impractical to try to mention them all. The best we can do is to select one that is typical, and the one I have chosen is the STAR SG-10.

A printer for use with the VZ-200/300 needs to be a Centronics Parallel type. Without getting technical that means the VeeZed Printer Interface will fit and will operate the printer.

We have already mentioned that the printer holds in memory the ASCII Code of numbers corresponding to the characters it will print. As the VeeZed does not have lower case characters and the printer does, then obviously the ASCII Code of the VeeZed is not the standard code. The standard code (from 0 to 127) is published in MICRO MAGIC. Can you devise a FOR..TO..NEXT loop that will print out a list of the computer's ASCII Code from 32 to 255? You could then compare the printable characters of the printer and the computer. This was how the sub-routine for the ASCII Conversion in MICRO TYPE was devised. Maybe, you can improve on this one.

The Dick Smith GP-100 uses blocks of ASCII numbers to simulate the graphics of the VeeZeds. It will LLIST a program that has graphics in the program lines. It will allow COPY to be used in both MODE(0) and MODE(1). Everything seems to be in favour of using the GP-100 with the VeeZed. Unfortunately, there are a couple of disadvantages. The first is that the actual type-face is not very atractive. The characters have no DESCENDERS. They are that part of a letter such as p, q or y that DESCEND below the print line. The other disadvantage is that Graphic characters take up more space than a text character making a mess of a COPY or screen dump of mixed graphics and text. This printer will not take plain paper (only tractor-feed) and uses an expensive ribbon cartridge that doesn't last too long. This will give you some idea of what to look for when buying a new printer.

The printer being used to prepare this page is a STAR SG-10. Any Printer Control Codes mentioned here are those appropriate to this printer; yours may be different, but they are typical. The Operating Manual for most printers has a list of Commands that will act as Control Codes. Most begin with ESC. As you're aware the VeeZed does not have an ESC (ESCAPE) key. We do not know or understand why the VeeZed does not have an AUTO, CLEAR or ESCAPE key; but that's another story.

ESC (ESCAPE) is CHR$(27). In a program where ESC is to be used many times, E$=CHR$(27) will appear at the beginning of a program. A typical Control Code may be given as ESC"B"CHR$(4). To send that to the printer you would type;

```
LPRINTCHR$(27)"B"CHR$(4);
```

or if E$=CHR$(27) has been included in a program, the command would be written in a sub-routine as;

```
LPRINTE$"B"CHR$(4);:RETURN
```

Note that there are NO COLONS or COMMAS in the command itself. The semi-colon at the end is to prevent the printer from doing an unwanted line-feed. An alternative to the letter in quotes would be to enter it as CHR$(66) which is a "B". If your list of Printer Commands looks like ESC "B" 2, the ESC is CHR$(27), the "B" can be "B" or CHR$(66) and the 2 CHR$(2). There are some commands that do not require ESC and are usually just the single CHR$(15), or similar. And, if your list shows a LOWER case letter, then the standard ASCII CODE table will provide the CHR$(...) number to use. There are lots of variations such as SI 15. A good rule is that if ESC is not specifically given then, in this example, CHR$(15) is all that is required.

PRINTER EXPERIMENT.

Here is a very much shortened version of MICRO TYPE. It will enable you to experiment with the PRINTER COMMAND of your particular printer

```
10 CLEAR3000:DIMZ$(20):E$=CHR$(27):L=1:CLS
20 PRINT@286,"":INPUTZ$(L):W=LEN(Z$(L)):CLS
30 FORJ=1TOL:FORI=1TOW
40 A=ASC(RIGHT$(LEFT$(Z$(J),I),1))
50 REM
60 REM
70 IFA=91THENA=0:GOSUB200        ' 91 IS SQUARE BRACKET SHIFTO
80 IFA=93THENA=0:GOSUB210        ' 93 IS SQUARE BRACKET SHIFTP
90 IFA>=64ANDA<=95THENA=A+32     ' FOR LOWER CASE
100 IFA>=192ANDA<=223THENA=A-128' FOR UPPER CASE
110 IFA>=224ANDA<=255THENA=A-192' FOR INVERSE TO NORMAL
120 LPRINTCHR$(A);:NEXT
130 LPRINT:PRINTZ$(J):NEXT
140 L=L+1:GOTO20
200 LPRINTCHR$(14);:RETURN       ' EXPANDED - ON
210 LPRINTCHR$(15);:RETURN       ' EXPANDED - OFF
```

Studio Ad Lib

GP-100 OWNERS When you RUN this, type a line of text putting a word in SQUARE BRACKETS. Thats those on keys O and P. That word will appear in EXPANDED type.
Then add these lines:

```
 50 IFA=35THENA=0:GOSUB220   '35 is the # sign (SHIFT 3).
220 W=LEN(Z$(J)-1:LPRINTCHR$(20):
230 FORU=1TOW:LPRINTCHR$(95);:NEXT:RETURN
```

Put a HASH sign (SHIFT3) AFTER a few words in a line of text and the printer will UNDERLINE those words. CHR$(20) sends the print head back to the beginning of the line without a line-feed and the loop in line 230 will type the Underline back to where you put the SHIFT2. Now you know why the UNDERLINE is unsatisfactory on this printer. It overprints the bottom of the words. You may find a use for it.

OTHER PRINTERS Change lines 200 & 210 to Control Codes taken from your printer manual. Use practical ones such as *ITALICS* or CONDENSED. By putting a word in SQUARE BRACKETS (SHIFTO and SHITP) the printer will obey your Controls. The REMs will give you the opportunity of working out a system of your own.

CLUE If you typed PRINTASC(" ") the computer would return a number for whatever you put between the quotes. If, say, you put a SHIFTQ GRAPHIC then the printer would return 144. And if you did that again with a SHIFTW GRAPHIC you would get 151.
OK, supposing you made lines 50 and 60:

```
50 IFA=144THENA=0:GOSUB240
60 IFA=151THENA=0:GOSUB250
```

you could then access any control code in lines 240 and 250, using 240 to turn the control ON and 250 to turn it OFF again. To use this control in the text you only have to put a SHIFTQ in front of a word and SHIFTW after it. And it doesn't have to be just a word. It can be one letter, one word or a number of words. Don't forget that E$=CHR$(27), and don't forget the ;

One last word on Control Codes for printers. Sometimes a code will take precedence over another. For instance, if I select NLQ, (Near Letter Quality), some of the other codes cease to work. While in NLQ I cannot use SUPERSCIPT, SUBSCRIPT and some others. Only by referring to your Operating Manual can you see what restrictions there are.

If you have any problems with your particular printer then drop me a line with a sample of the codes from your book and I will try to help.

[illegible] 1

SCROLL EDIT

PRINT

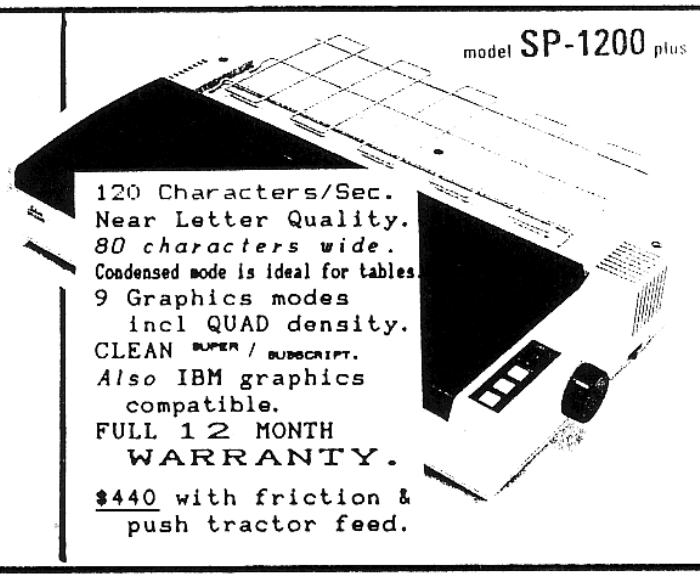
FILE

RETRIEVE

CONTINUE

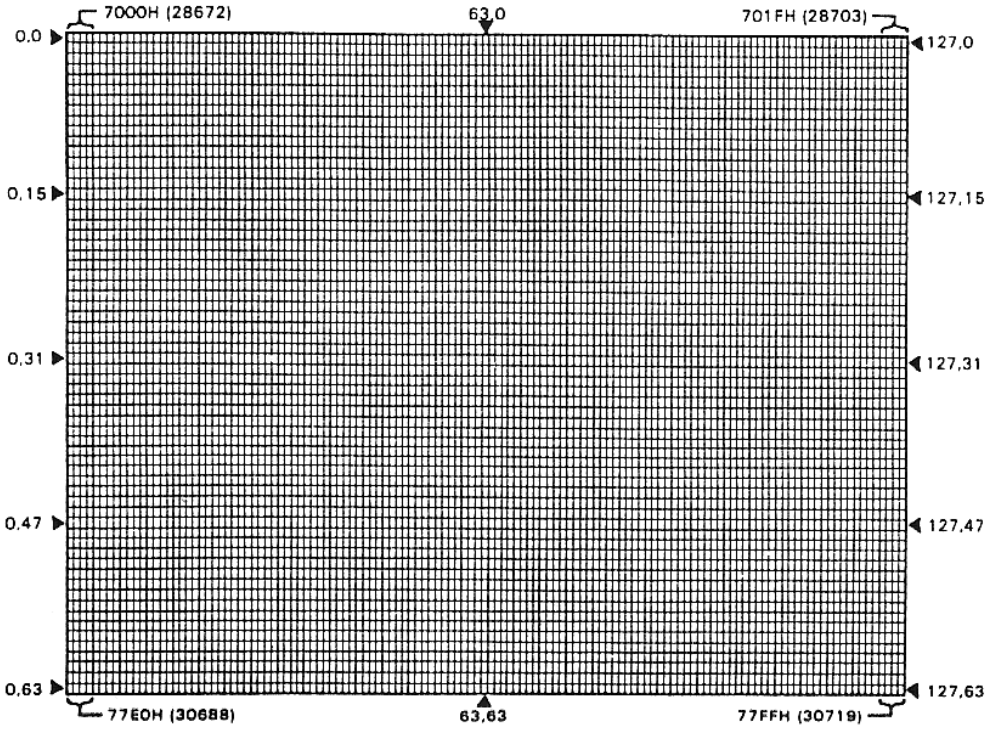
[illegible] 0

MICRO TYPE MENU



TIP.Consider taking your VeeZed and a Printer Interface with you when you go shopping for a printer and give some controls a try to be sure its going to work at home. Try a few LPRINTs in case the printer is dedicated to IBM. A reel-to-reel ribbon lasts longer and is cheaper and to be able to use plain paper, as well as fan-fold tractor feed, can be very handy. Friction feed will take envelopes also.

(MODE 1)



Although MICRO MAGIC is a beginner's guide to BASIC, there are users who are interested in Machine Code programming. The next Studio Ad Lib will contain an explanation of what Machine Code is. A couple of experimental programs will be given to help in discovering what parts of the computer's memory locations are used for. And for those already using POKES into memory there will be a table of TOKENS.